Remediation Work Plan
Former Mercury Meter Measuring Stations

Prepared For

EnerVest Operating Company, LP

Louisiana Department of Environmental Quality
Agency Interest Number 149272

November 20, 2007

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1.0 INTRODUCTION

1.1 BACKGROUND

EverVest Operating LLC (EVO) operates production and gathering facilities in the Monroe Gas Field in northern Louisiana. As a part of these operations, orifice type metering equipment is used to measure volumes of natural gas. The orifice meter equipment utilizes an internal flow restrictive orifice plate that creates a pressure differential across the orifice. A number of the meters historically employed a mercury manometer to measure the volume of natural gas being produced or gathered. Elemental mercury from these meters may have been released by various means potentially impacting the surrounding environment.

EVO plans to perform remediation at historical mercury meter locations identified as having mercury impacts, here forward referred as an Area of Concern (AOC). These AOCs will be addressed under this Remediation Work Plan (RWP). The Louisiana Risk Evaluation and Corrective Action Program (RECAP) non-industrial Screening Option (SO) soil screening standard (SS) of 2.3 milligrams per kilogram (mg/kg) total mercury will be used as the remediation action level (action level) for these AOCs. The remediation effort will be documented using the RECAP reporting format and submitted to the Louisiana Department of Environmental Quality (LDEQ) for No Further Action (NFA) or Certificate of Completion AOC closure. This RWP details the methodologies and procedures for identification, remediation, confirmation sampling, and disposal of the impacted soil. In addition, this RWP details procedures for the reporting of remediation and confirmation sampling activities, and QA/QC methodologies.

1.2 REPORT ORGANIZATION

Section 1.0 of this RWP outlines the work to be performed including the types and selections of sites, remediation objectives and action levels, and scope of work to be performed. Section 2.0 of this RWP presents the project's organization and management systems. Section 3.0 presents the remediation procedures and waste handling while Section 4.0 details sampling and analysis procedures. Section 5.0 discusses non-conformances to the plan and Section 6.0 summarizes health and safety procedures.

1.3 TYPICAL AOC CONFIGURATIONS

The AOCs are typically found in one of four meter run configurations. Each configuration affects the potential dispersion of mercury released to the surrounding environment. The dispersion characteristics are used in determining the likely horizontal and vertical extent of impact.

Configuration #1: Tower Setting

In areas where annual flooding occurs, meters have been placed in towers that are erected to heights of 5 to 35 feet above the ground. These tower AOCs may have a shed enclosure, partial roof or canopy atop of the tower to shelter the meter from direct sunlight and rain.

Configuration #2: Meter Shed with Soil/Gravel

Shelters have been constructed of wood, metal and occasionally brick to protect the metering equipment from the weather and vandalism at many locations. The sheds are typically set directly on the ground and the interior flooring is predominately soil or gravel. Occasionally other flooring materials are encountered such as crushed brick or shells.

Configuration #3: Meter Shed with Concrete Floor
Shelters of similar construction as Configuration #2 (constructed of wood, metal, or brick) but having concrete floors.

Configuration #4: In-Line Meter
In AOCs where flooding or sheltering is not a major consideration, meters are set directly on the gathering line. These meters are typically protected from the weather by either small removable boxes that slide over the meter or by larger boxes that are attached to the gathering line.

1.4 AOC SELECTION

EVO is conducting a search to identify meter locations that formerly employed mercury filled measuring equipment. The search involves employee interviews, site visits, and a review of historical meter records. Identified former mercury meter locations are then evaluated to determine if the site is located in a non-industrial potentially sensitive area. Potentially sensitive areas may include those that are 1) within 500 feet of residences, schools, parks or playgrounds, 2) within 100ft of perennial streams or lakes, 3) adjacent to wetland areas, and 4) located in other non-industrial areas where a high probability of exposure may exist (e.g. heavily trafficked right-of-way's etc.). All sites will be identified through site visits and documented using the "Meter Location Assessment Form" (Appendix A). Once identified, potential sites will be further characterized and classified using the following methodology.

Class I - Visible mercury found at site; site designated an AOC and is scheduled for remediation

Class II - Visible mercury not encountered; collect screening soil samples from directly beneath and around meter or former meter; screening soil samples sent for laboratory analysis to determine if total mercury concentrations exist at the site exceeding the action level. If laboratory results indicate total mercury concentrations exceed the action level then the site is designated an AOC and is scheduled for remediation.

Class III - Visible mercury not encountered; collect screening soil samples from directly beneath and around meter or former meter; screening soil samples sent for laboratory analysis to determine if total mercury concentrations exist at the site exceeding the action level. If action level for total mercury is not exceeded in samples sent for laboratory analysis, site is removed from consideration, no remediation performed.

Any site located in a potentially sensitive non-industrial area that exhibits visible mercury will be designated as an AOC and scheduled for remediation without any further characterization activities. If the visual investigations do not indicate a "positive" mercury impact, then screening soil samples will be collected and shipped for laboratory analysis to determine if site is to be designated as an AOC. Sites exhibiting total mercury concentrations in soil in excess of the 2.3 mg/kg action level for total mercury will be considered impacted, designated as an AOC, and remediated under this Work Plan. Sites that do not exhibit visible mercury and have total mercury concentrations in soil less than the 2.3 mg/kg action level will be removed from consideration for remediation. All site characterization data will be collected and submitted under separate cover (Completion Report) after assessment activities have been completed. The Completion Report will, at a minimum, include the Meter Location Assessment Form (Appendix A), Characterization Data Sheet (Appendix B), location maps, laboratory results,

Chain of Custody documents and laboratory QA/QC reports. The Completion Report may be segregated into multiple reports based on site grouping by geography, year the work was completed, or any other operational criteria determined by EVO to be appropriate for the overall program.

1.5 OBJECTIVES

The overall objective of this program is to perform remedial activities to remove mercury impacted soils located in non-industrial potentially sensitive areas at concentrations exceeding the 2.3 mg/kg total mercury action level. The 2.3-mg/kg action level was selected to correspond to the LaDEQ RECAP non-industrial SO soil screening standard for total mercury. The objectives specific to remediation of mercury impacts at each AOC will focus on the immediate vicinity around each meter and are as follows:

- Excavate soil to a minimum of nine inches below ground surface (bgs) from a pre-defined area based on the configuration of the meter station as described in Sections 1.3, 3.3, and shown schematically in Appendix E.
- Use field screening techniques or sampling to determine whether additional excavation is necessary to achieve the remediation level.
- Continue excavation, if necessary, beyond the pre-defined area to remove remaining mercury impacted soil until the remediation level is achieved.
- Collect and perform laboratory analysis on discrete soil samples to confirm the removal of mercury-impacted soil to concentrations below the remediation level.
- Restore the remediated AOC where necessary so as not to pose a safety or environmental hazard. Restoration may include backfill and / or contouring of excavations. In cases of small excavations or in areas where backfill is not operationally necessary or is impractical, excavations may not be backfilled. All non-backfilled excavations will be completed so as not to pose a safety hazard.

1.6 REMEDIATION ACTION LEVEL

The remediation action level for soil will be to the LaDEQ RECAP non-industrial (SO) soil screening standard of 2.3 mg/kg, total mercury based on EPA Method SW 846-7471 reported on a "as received" basis.

1.7 SCOPE OF WORK

This RWP has been designed with flexibility so that decisions regarding remediation at each AOC can be made as the program evolves and more data becomes available. Confirmation soil sampling and corresponding laboratory analysis for total mercury will document attainment of the remediation action level.

To accomplish the objectives, the program will be performed in two phases: 1) the initial remediation phase, and 2) the confirmation sample phase. A final report will be prepared at the conclusion of remedial activities and upon receipt of all laboratory results in order to document the remediation process and obtain agency closure.

1.7.1 REMEDIATION TASK LIST

- Mobilize field labor and equipment.
- Prepare the AOC for remediation and establish applicable environmental controls.
- Recover visible mercury then remove the soil around the meter equipment based on the AOC configuration.
- Conduct additional soil excavations to remove any remaining mercury impact above the

remediation action level.
- Document and photograph the remedial activities.

1.7.2 CONFIRMATION INVESTIGATION TASK LIST
- Collect soil confirmation samples for laboratory analysis to demonstrate soil remediation action level attainment
- Characterize and dispose of soil generated during the remediation activities.
- Complete AOC restoration as necessary.

2.0 PROJECT ORGANIZATION AND MANAGEMENT

2.1 ORGANIZATION

A project organization chart, which depicts the lines of authority and the reporting structure, is provided in Appendix C. An EVO representative will be responsible for project management and will be responsible for the project direction, final approval regarding technical decisions and interfacing with federal, state and local agencies. EVO will designate a field project manager, who may be a third party contractor, to perform field activities and prepare project documentation.

2.2 PROJECT SCHEDULE

Following approval of the RWP, project activities will be initiated within the time frame agreed to between EVO and LaDEQ. In general, the project will be conducted in the following order:

- Organize the inventory of AOCs into geographic subsets.
- Prioritize the subsets.
- Prepare the remediation schedule and project milestones.
- Determine location(s) to be used as secure central staging areas for excavated soil.
- Mobilize the field crew(s) to the first subset of AOCs.
- Remediate the areal extent of soil impact at each AOC.
- Collect soil confirmation samples for laboratory analysis to confirm that the mercury concentration in the soil at each AOC is below the remediation action level.
- Revisit AOCs requiring additional excavation and collect additional confirmation samples.
- Restore and backfill each AOC with approved clean fill material where necessary.
- Complete waste profiling, transport, and dispose of all waste at an approved facility.
- Prepare the final report documenting the AOC activities, results, and waste disposal and submit for review.
- Mobilize the field crew(s) to the next subset of AOCs and perform remedial activities.
- Assemble reports for each subset of AOCs into a Final Closure Report for submission to LaDEQ.
- Request agency closure (NFA or Certificate of Completion).

3.0 REMEDIATION PROCEDURES

An iterative approach utilizing combinations of visual observation, meter type configurations, and soil screening data will be used to define the areal extent and depth of remedial excavations. In addition, soil vapor data may be used to help define the scope of the remediation. It is anticipated that the excavation of mercury-impacted soil will be adequate to achieve appropriate remediation action levels. Confirmation sampling will be performed following all excavations.

3.1 MOBILIZATION

The field project manager will be responsible for performing AOC preparation activities, mobilization to the work sites and demobilization from the work sites. General work area(s) will be established at the AOCs including ingress/egress routes for vehicles. Mobilization and demobilization will occur on a continuing basis, from AOC to AOC, as the work progresses.

Prior to implementation of remediation activities at an AOC, various support activities must be initiated and completed. Field operations will begin at AOCs only after the required pre-field activities have been completed. Pre-field activities include the following:

- **Approvals and Permits** - Permits and/or approvals that may be required for remediation activities will be obtained prior to performing AOC remediation activities.

- **Transportation and Disposal Facility Arrangements** - The excavated soil and any other material containing mercury will be transported to the proper final disposal facility according to State and Federal regulations by a licensed waste transportation contractor. Due to the small quantity of material expected to be generated at each AOC, the number of AOCs to be remediated and the remote location of most of the AOCs, a "milk run" format for loading and collection of materials will be employed in lieu of individual AOC shipment directly to the disposal facility. Given the fact that none of the excavated soil is anticipated to be hazardous, secure centralized staging areas may be used to gather impacted soil where AOC security and access are potential concerns. Waste transportation paperwork will include the use of the appropriate manifest and documentation system.

- **Notification of Affected Property Owners** – The field project manager will be responsible for notification of property owners (where required) and insuring access to the AOCs. An EVO designated representative may assist the field project manager in the initial contact of these individuals and or entities. If requested, the field project manager will provide the property owners an anticipated schedule of activities and completion dates. The field project manager may provide this information to property owners verbally.

- **Notification of Local Emergency Management Agencies** – Where required, the appropriate emergency agencies will be notified in accordance with all proper Health and Safety procedures.

3.2 AOC CONTROLS

The field project manager will be responsible for control and access to each AOC. The expected levels of mercury vapors in the work areas and the RCRA classification of the waste/soil determine the Work zones established during the remediation phase. Since the work areas are typically well ventilated, the OSHA Permissible Exposure Level (PEL) or 8 hour Time Weighted

Average (TWA) for mercury vapor is rarely exceeded. Additionally, based on profiling data generated for similar wastes during previous remediation activities, elemental mercury impacted soils at metering locations have historically been determined to be RCRA-non-hazardous. Due to these factors and for the purposes of this RWP, all AOC work will initially be considered non-hazardous. A single, verbally defined Work Zone will be established for non-hazardous conditions primarily to prevent the spread of mercury-impacted soil and to restrict access of non-remediation personnel. The field project manager will have the discretion to upgrade the work restrictions or further restrict access if AOC conditions such as elevated mercury vapor levels, Slip and fall hazards, AOC specific restrictions, overhead or underground hazards and/or confined work space conditions exist.

At AOCs where mercury vapor levels exceed the OSHA TWA of 0.10 mg/m^3, the following work zones will be defined:

- **Exclusion Zone** - Remediation activities will take place in this area. Personnel entering or leaving the exclusion zone will do so through the contamination reduction corridor associated with the Contaminated Reduction Zone (CRZ). Personnel will enter and exit the exclusion zone via this designated route and will wear the appropriate personal protective equipment, as specified in the Health and Safety Plan.

- **Contamination Reduction Zone (CRZ)** - Initial decontamination of personnel and equipment will take place in this area. Final decontamination will be performed outside this zone. A specific location for ingress/egress from the support zone to the CRZ will be designated.

- **Support Zone** - this zone will be used to store decontaminated equipment, vehicles, tools, etc. This area will be designated as a clean area.

A detailed Health and Safety Plan will be prepared for remediation activities. General health and safety procedures are summarized in Section 6.0

At times it may be necessary to access or service the AOCs during the remediation, backfilling and/or restoration process. When these activities are required, the work zones will be temporarily modified to allow access. Appropriate Health and Safety controls will be developed and will be implemented if required. Such controls may include: temporarily covering exposed soils, providing wooden planking over excavations or other barriers.

3.3 SOIL REMEDIATION

The remedial method will be soil removal via excavation. Excavated soils will be transported and disposed of in accordance with State and Federal Environmental Regulations.

3.3.1 SOIL EXCAVATION PREPARATION

The impacted soil will be excavated using hand tools, mechanical excavation equipment or a combination of the two methods. The field project manager will select soil excavation methods. Soil excavation method(s) will depend on the size of the area to be excavated and whether the area is restricted with above or below ground piping, metering station structures, active utilities, etc. All excavations will comply with applicable OSHA requirements.

3.3.2 SOIL EXCAVATION

The meter type configuration as introduced in Section 1.3 and illustrated in Appendix E

influences the extent of potential horizontal dispersal of mercury upon its release into the environment. These influences have been used to determine an initial excavation footprint or starting point for the remediation effort. The following describes dimensions and rationale for the initial excavation footprint for each meter type configuration.

Configuration #1 - Towers
The meters are set above the ground to heights of up to 30 feet. Mercury released from these heights has the potential to be dispersed over a larger area due to impact and spattering upon impact with cross beams and surface piping. The splattering effect increases the overall area of impact but also tends to confine the impact to the surficial soils (0-6") in areas other than directly beneath the meter(s). The initial excavation footprint used for Tower configurations is an area 5' x 5' and to a depth of 9" centered beneath the meter and a removal of the first six inches of soil from the remaining area within the interior of the supports.

Configuration # 2 - Meter sheds with soil or gravel floors.
The shed limits the dispersal of mercury to the interior confines of the structure. The most probable pathway away from the shed is via foot traffic through the doorway. The contaminant spread by tracking via the doorway has been found to be predominantly surficial. The initial excavation footprint for meter sheds with soil or gravel floors is an area 5' x 5' and to a depth of 9" bgs centered on the meter inside the building and the removal of 1-3" of soil from a radius extending 18" from the center of the doorway. This footprint is modified for sheds with dimensions of 8' x 8' or greater or for sheds with multiple doorways

Configuration # 3 - Meter sheds with concrete floors.
The shed limits the dispersal of mercury to the interior confines of the structure. The most probable pathway away from the shed is mechanical means (sweeping) or via foot traffic through the doorway. Mercury swept out the doorway tends to be concentrated within a foot of the doorway threshold and surficial within a three-foot radius of the doorway. The initial excavation footprint for meter sheds with concrete floors is removal of 9" of soil from a radius extending 18" from the center of the doorway and 1-3" from a radius extending 18" to 36" from the center of the doorway. This footprint is modified for sheds with multiple doorways or concrete walkways leading to the entrance of the shed. In addition to performing remediation of soils in the doorway area, the interior of the shed will be inspected for free mercury and, if observed, the free mercury will be removed from the shed.

Configuration # 4 - In-line Meters
Potential releases of mercury with this configuration are primarily concentrated directly beneath the meter or orifice flange. The initial excavation footprint for in-line meter AOCs is an area 4' x 4' and to a depth of 9" bgs

3.4 REMEDIATION CONFIRMATION

The actual area of soil excavated will be based on the AOC configuration, data collected from the AOC investigation, and visual observations made during the excavation. In addition, soil vapor data may be used to help define the scope of the remediation. Additional excavation may be required following the results of verification screening and an initial round of confirmation sampling. Remediation will be considered complete when the results of confirmation sampling are below the remediation action level

3.4.1 VERIFICATION SOIL SCREENING

Verification soil screening will be conducted within the excavation boundary to determine if mercury concentrations exceed the remediation level at depths greater than nine inches.

Various methods may be used to determine whether additional excavation is required. A visual inspection of the excavated area for the presence of mercury will be performed at all AOCs.

If mercury is not visibly present the field project manager may elect to perform a HHS field verification test with a MVA. This field screening method consists of collecting discrete soil samples from beneath the meter equipment and from up to four locations along the excavation perimeter. The soil samples are heated to approximately 90 F in a closed container then allowed to cool to ambient temperatures. An air sample is then collected with the MVA and the mercury vapor levels in the sample are measured.

If a HHS soil sample exceeds the field MVA action limit of 0.005 milligrams per cubic meter (mg/m^3) then an additional cut of soil may be excavated from the area where the sample was collected. HHS sampling, screening, and removal will continue using this rational until the soil sample is less than the MVA action limit or excavation has reached a depth of 18 inches bgs.

Due to the limits of the MVA and the HHS field test method the field project manager may elect to forgo this field test method and proceed with confirmation sampling.

All excavation activities will be documented with field measurements that will include excavation, plan dimensions and depths referenced to the original surface grade, photographs of the activities, confirmation sample locations and completion of applicable field forms.

3.4.2 CONFIRMATION SOIL SAMPLES

Confirmation soil sampling will be conducted at each AOC following soil excavation and soil verification screening activities. Soil confirmation samples will be collected as follows:

- A discrete 6" core sample will be collected from the excavation base directly underneath the meter.
- AOC Configuration # 1 & 3 - Four discrete samples will be collected from 1-7 inches bgs equally spaced around the excavation perimeter.
- AOC Configuration # 2 & 4 - One discrete sample will be collected from along each excavation sidewall at the mid point of the ground surface and the excavation base.

If one or more of the discrete soil sample analytical results exceeds the remediation level, additional excavation and confirmation sampling will be performed in the immediate vicinity of the exceedance. These activities may be repeated in the immediate vicinity of the exceedance until the remediation action level has been met. The initial sampling locations for each of the AOC configurations are presented schematically in Appendix E.

3.5 CONDITIONS LIMITING REMEDIATION

Certain conditions may be encountered during remediation that would limit the extent of excavation and/or cause risk-based RECAP Management Options (MO) to be considered for closure. Excavation and sampling will cease and be reevaluated when anyone of the following limiting conditions is encountered:

- **Groundwater** – If groundwater is encountered, excavation will cease and a groundwater sample will be collected and analyzed for mercury using Method 7470 for total mercury in water.

- **Excavation Depth** – An excavation depth of 18 inches below the existing ground surface and confirmation sample results indicating mercury concentrations greater than 2.3 mg/kg

are present. Considerations for Risk-Based RECAP Management Options will be evaluated for closure prior to performing additional remediation and sampling.

- **Operational Considerations** - The various gathering lines to which the metering equipment is attached operates at high pressures and includes a wide variety of underground piping, wiring, conduits, support structures and other equipment. Accordingly, the remediation activities in the vicinity of certain pipeline facilities affected by this investigation and remediation program may need to be modified to ensure the safety of workers or other individuals and/or to protect the integrity of pipeline equipment and facilities.

  At any AOC where field project manager believes that operational considerations exist, a Record of Technical Change form will be completed in accordance with Section 5.0. The nature, location, description and/or any other pertinent information that supports the deviation from the RWP will be recorded on the form. Notification of the change will be submitted to the LaDEQ for review. If the LaDEQ is in agreement with the recommended site specific changes, the Record of Technical Change form will become a part of the Final Report for the AOC affected.

- **More Harm Than Good** - If, in the opinion of the field project manager, the remediation activities would create a situation or condition that environmentally would result in doing "more harm than good", the field project manager will seek the concurrence of the EVO Project Manager and the LaDEQ that further actions will not be taken and that RECAP Management Options for closure be evaluated.

- **Feasibility** - Remediation may be suspended or ceased if conditions encountered make further remediation activities not "feasible". Safety, operational, technical or other conditions may present situations that make remediation impractical, technologically infeasible, cost prohibitive or present operational problems that do not necessarily fall in the "operational considerations" category. The field project manager will contact the EVO project manager and LaDEQ to discuss closure under a RECAP Management Option.

- **Background Levels exceed Remediation Level** – If the naturally occurring background concentration exceeds the remediation action level of 2.3 mg/kg, then the background concentration, as determined using RECAP regulations, will become the new remediation action level. For any AOC where the background concentrations are proposed as the new remediation action level, a sample will be collected to determine the AOC-specific background. A background sample will be collected from non-mercury impacted areas of similar soil type. This sample will be collected in a location as close as practical to the actual AOC while still being a non-mercury impacted location. In these situations the LaDEQ will be notified and a Record of Technical Change form will become a part of the Final Report.

3.6 DECONTAMINATION PROCEDURES

3.6.1 SAMPLING TOOLS

All sampling equipment, other than disposable equipment, which could potentially contact a sample matrix, will be decontaminated prior to use. The decontamination procedures are as follows:

- Wash with potable water.
- Rinse with potable water.
- Allow to air dry.

Fluids and solids generated during tile decontamination of sampling equipment will be bulked

with the excavated soil pending disposal..

3.6.2 EXCAVATION EQUIPMENT

All tools and/or excavating equipment used in the removal of the impacted soil will be decontaminated as follows:

- Scrap or brush to remove any soil adhering to equipment.
- Rinse with potable water.
- Wipe with a clean cloth.
- Allow to air dry.
- Place in an unused mini waste bag until the next use.

3.7 WASTE HANDLING

Excavated soil will be placed into poly extrusion coated mini bags (approximately 0.02 cubic yard bags) and labeled with permanent marker to denote the AOC ID. An initial representative waste profile sample will be collected from excavated soil at the remediation site prior to transport. As no waste is currently anticipated to be classified as hazardous, and in order to ensure security and because of difficult access at some sites, excavated soil will be transferred via field vehicles immediately following remediation from the AOC to a temporary secure staging area prior to the receipt of profile results. However, no waste will be transported to a disposal facility until final results of waste profiling are received.

The mini waste bags will be segregated by AOC ID at the secure staging area and will remain segregated until they are loaded for transport to the disposal facility. Mini waste bags will not, at any time, be commingled or mixed prior to receipt of waste profiling analytical results.

Liquids generated from decontamination of equipment, which can readily be absorbed in the excavated soil without greatly increasing the moisture content of the soil, or modifying the soil disposal profile will be bulked with the excavated soil. Liquids that cannot be readily adsorbed will be containerized in lock ring lid type, 55 gallon DOT rated drums.

If free mercury is collected, it will be containerized for future reclamation.

At a minimum, profiling samples of remediation waste generated under this work plan will be analyzed for soluble mercury content using Method 1311/7470 Toxicity Characteristic Leaching Procedure (TCLP) for mercury. Based on profiling sample analytical results, wastes will be categorized into one of three categories.

3.7.1 CATEGORY 1, NON HAZARDOUS WASTE

Any waste found to contain less than 0.2 mg/l soluble mercury by TCLP Methods will be considered non-hazardous solid waste

Category 1 waste will be transported to an industrial class solid waste landfill or disposed of by other methods that meet federal and state requirements.

3.7.2 CATEGORY 2, HAZARDOUS LOW AND CATEGORY 3, HAZARDOUS HIGH WASTE

Any waste found to contain greater than 0.2 mg/l soluble mercury by TCLP Methods and less than 260 mg/kg total mercury will be classified as Hazardous Waste Low.

Any waste found to contain greater than 0.2 mg/l soluble mercury by TCLP Methods and greater

than 260 mg/kg total mercury will be classified as Hazardous Waste High.
Once at a temporary secure staging area, Category 2 or 3 wastes will be packed in lock ring lid type, 55 gallon DOT rated drums, labeled to denote the hazardous constituent and segregated from the non-hazardous and solid waste. If large quantities are generated duffle top, nylon, water resistant cubic yard bags may be used to load waste into a DOT approved roll off box or 30-yard end dump. The EVO Project manager will immediately be informed as to the specifics of any hazardous waste generation (e.g. type, volume, weight, generation date, etc..) using the Hazardous Waste Generation Notification form located in Appendix F.

The EVO Project Manager will then notify the host facility in order to ensure that all hazardous waste regulatory requirements are met. These requirements and the proposed management strategy for each are presented in the Hazardous Waste Management Matrix in Appendix G.

Where available, existing EVO hazardous waste ID numbers will be used to manifest hazardous waste. If no current number is available for a particular facility, the LDEQ will be contacted and a Temporary Hazardous Waste ID number will be obtained. Where applicable, hazardous waste generated as a result of activities performed under this work plan will be incorporated into the overall EVO waste management program.

Hazardous waste containers will be inspected weekly to ensure competency prior to transportation. On the date of transportation of hazardous waste, a Uniform Hazardous Waste Manifest and Land Disposal Restriction (LDR) Notification document (if applicable) will be prepared, signed by the generator or its designated representative and the licensed hazardous waste transporter. The waste will then be transported to an appropriate Resource Conservation and Recovery Act (RCRA) permitted treatment/storage and disposal (TSD) facility for treatment that meets the UTS and disposal. The RCRA TSD selected will be based on the geographic location of the waste, the waste composition (e.g. solid, liquid, semi-solid), and the quantities generated. The standards applicable to generators of hazardous waste found in 40 CFR 262 Subparts A, B, C and D will be followed and communicated to the EVO Project Manager. Category 3 wastes will be loaded onto transport vehicles for shipment to an authorized retort facility.

3.8 RESTORATION

Each excavation will be restored as necessary to prevent the accumulation of water. Depending on its configuration, backfill of the excavation may be completed following the verification of the remediation action level. All backfill will consist of clean un-impacted soil. The area will be restored, as closely as practical, to the pre-remediation condition. Clean backfill may be stockpiled on site. If necessary, most AOCs will be backfilled within a short time and the stockpile will be small (one to two cubic yards); however, if backfill is left on-site for an extended period of time or if the stockpile is over ten cubic yards, erosion and sedimentation controls will be placed to prevent erosion of the backfill material.

It is the intention to restore all excavations to original grade following remediation. However, situations may develop (i.e. elevated grade excavated to surrounding grade, etc.) where backfill is not operationally necessary. In these situations, with prior approval of LDEQ, backfilling to original grade will not be required. All non-backfilled excavations will be completed so as not to pose a safety hazard.

3.9 REMEDIATION DOCUMENTATION

Documentation of remediation activities will be completed for all AOCs and include all of the

applicable SO submittal requirements outlined in Section 3.3 of the LDEQ RECAP Guidance Document.

AOC remediation activities will be noted by the field personnel on the AOC Remediation Data Sheet (Appendix D), equivalent electronic forms, and / or via handheld computers. The following information will be recorded completed for each AOC:

- A record of remediation activities will be maintained for each AOC. The information will include, but not be limited to, name, location, date, time, climate data, documentation of excavation limitations and sample identification.

- A drawing will be prepared showing the AOC and extent of the excavation, sample locations and identifiers, nearby structures, existing and/or former meter location etc.

- Photographs will be taken of completed excavations.

- Deviations from the RWP, inconsistencies or problems will be noted.

The following items will be included in the final AOC closure report to satisfy the nineteen LDEQ Screening Option submittal requirements:

1. Submittal summary form RECAP Form 1.
2. The site ranking and justification for the ranking.
3. A generic description of the site history and site setting.
4. Topographic map with AOC(s) labeled.
5. A topographical map showing the vicinity of each gas field.
6. An AOC configuration map with significant features.
7. The longitude and latitude of the AOC collected via GPS.
8. Detailed AOC map with sampling locations.
9. Description of the AOC.
10. The land use at each location (listed on the Meter Location Data Sheet).
11. Text documentation that the AOC meets the criteria for screening under SO.
12. Closure sampling data with supporting QA/QC
13. Generic description of the Conceptual Site Model
14. N/A
15. Maximum detected concentration for mercury in soil and analytical data reports.
16. N/A
17. Ecological Risk Assessment Checklist RECAP Form 2.
18. N/A
19. N/A

Submittal requirements (14) and (16) are not applicable to work performed under this work plan. Requirements (18) & (19) are not applicable as long as the SO is elected. Therefore, submittal requirements (14), (16), (18), and (19) will not be provided in the final closure report.

3.10 PHOTOGRAPHIC RECORD

Photographs will document representative remediation activities wherever appropriate. Additionally a photograph of the open excavation at each AOC will be taken.

4.0 CONFIRMATION SAMPLING

To ensure that the confirmation sample analytical results are representative of the conditions present at each AOC, the sampling procedures outlined in this section will be used. Sampling procedures may be modified based on actual field conditions encountered. Any modifications will be described in detail and be included in the final report.

4.1 SOIL SAMPLES

The number and locations of confirmation soil samples will be based on the configuration of the meter station pursuant to Section 1.3. The sampling protocol for each configuration is detailed in Section 3.4.2 and shown schematically in Appendix E. The actual sample locations will be established in the field at the time of sampling. Prior to collection, each soil sample will be identified in accordance with a sample identification system, which will be developed and reviewed, with each field crewmember prior to the start of field activities. A description of all sample point locations will be documented.

Discrete soil samples will be collected at specified locations that will extend from the excavated surface to a depth of approximately 6 inches. Any loose gravel, vegetation, or other incidental surface material will be cleared from the sample location prior to sample collection.

All samples will be placed into a clean glass or plastic sample container labeled with a unique identifier then placed in a cooler until shipment for laboratory analysis.

All sample equipment will be decontaminated prior to each use by the method described in this section.

Chain-of-custody procedures for the samples will be strictly observed.

4.2 SAMPLE HANDLING AND DOCUMENTATION

4.2.1 CONFIRMATION SAMPLE LABORATORY ACCREDITATION

Laboratories that are accredited, or are listed as accepting data while pending accreditation, by the Louisiana Department of Environmental Quality, will analyze all samples.

4.2.2 SAMPLE IDENTIFICATION AND LABELING

Samples taken in the field will be identified with a sample label affixed to the sample container. Sample labels will be completed with waterproof ink and must include the following at a minimum:

- Sample identification number.
- Date and time of collection.
- Name/initials of the collector.

4.2.3 CHAIN OF CUSTODY RECORD

A chain of custody record will be maintained for all samples submitted to the laboratory during this project. This record will also designate the laboratory destination. A chain-of-custody record will be completed for all samples to be shipped off site. Possession of samples collected or prepared in the field must be accountable from the time collected/prepared until disposal. Chain of custody records will be used to document transfer of sample custody. A sample is in custody if it meets the following criteria:

- In someone's physical possession.
- Maintained in view, after being in possession.
- Physical possession and then transferred to a designated secure area and/or forwarded to an express delivery firm.

When transferring the possession of samples, the individuals relinquishing and receiving possession will sign, date, and note the time on the record. This record documents sample custody transfer from the sampler, usually through another person or persons, to the analytical laboratory

4.2.4 SAMPLING DOCUMENTATION

Documentation for sample collection and handling include:

- Chain of custody record will be maintained for samples collected during this project. This record will designate the laboratory destination and will be completed for each sample to be shipped off site.
- All documents and data required under the RECAP SO will be included in the final report.

4.2.5 SAMPLE ANALYTICAL RESULTS REPORTING

Sample analytical results will be provided in the final report from the standard laboratory data report package. The standard laboratory data report package will include at a minimum:

- Client name and address.
- Client sample identifier.
- Analytical laboratory sample number.
- Date the sample was collected.
- Date the sample was received at the laboratory.
- Date the sample was analyzed.
- Analytical laboratory reporting limit for each analyte.
- EPA method used for the analysis.
- Concentration of each target analyte in the sample.
- Units used for expressing of the analyte concentrations.
- Initials of the analyst performing the test.
- Percent recovery of surrogate compounds (organics only).
- QC batch identifier.
- Results for the method blank sample analysis.
- Percent recoveries obtained for laboratory control sample analysis.
- Percent recoveries obtained for analysis of the matrix spike (all tests) and matrix spike duplicate (organic tests only) samples.
- Result obtained for duplicate sample analyses (inorganic test parameters).
- Relative percent difference between the analyte recoveries in the MS and MSD samples (organic analyses) or duplicate samples (inorganic analyses).
- Analysis footnotes that qualify analysis data or provide additional information related to the chemical analysis.
- Report date.
- Quality control data including: method blank, laboratory control sample (% recovery), matrix spike (% recovery), duplicate or matrix spike duplicate (relative percent difference-RPD), and surrogate spikes (% recovery).
- Any anomalies that are encountered during the analysis will also be reported.

4.3 QUALITY ASSURANCE / QUALITY CONTROL PROCEDURES

To help ensure the validity of the analytical results, a Quality Assurance/Quality Control (QA/QC) program will be implemented for the confirmation sampling. The program has established control limits that will be utilized to detect anomalous data that may require corrective action. The accuracy and precision of the analyses will be monitored by the analysis of both field and laboratory QC samples.

The physical state of the elemental mercury in combination with the sample matrix that will likely consist of soil composed of clays, silts, and sands and with various amounts of gravel sized rock fragments, will limit the ability to produce a perfectly homogenous sample. Because of sample heterogeneity and the potential for matrix interference, variation in analytical results including data outside established method QA/QC criteria may occur. All data outside established method QA/QC criteria will be evaluated for usability. All data determined usable will be considered in determining the attainment of the 2.3 mg/kg remediation action level for total mercury.

4.3.1 FIELD DUPLICATE SAMPLES

Field duplicate or split samples will be collected and analyzed as a measure of the analytical precision. Duplicate samples will be prepared by dividing the original sample into a separate aliquot. Duplicate samples will be collected at the rate of one field duplicate per 20 soil samples. The duplicate samples will be identified with a unique sample number and submitted to the laboratory.

4.3.2 SPLIT SAMPLING

The LaDEQ may on occasion request split samples on any and all samples collected. Analytical results of the LaDEQ sample(s) will be used for QA/QC purposes only.

4.3.3 DATA VALIDATION

Data validation will be performed and includes a systematic technical review of the laboratory analytical data. Data presented on the certificate of analysis and quality control summary will be inspected for adherence to method QA/QC criteria, accuracy, precision, and completeness. If the data does not meet the method QA/QC criteria, a determination will be made concerning the usability the data for the project. All data determined usable will be considered for attainment of remediation action levels and subsequent AOC closure.

4.4 ANALYTICAL PROCEDURES

A certified analytical laboratory contracted by field project manager will analyze all samples collected during the remediation at AOCs. The contract analytical laboratory will analyze each sample in accordance with the 'Test Methods for Evaluating- Solid Waste. Physical/Chemical Methods (U.S. EPA SW-846)", Third Edition. The specific methods for analysis are as follows:

- Method 7471 for total mercury in soil.
- Method 7470 for total mercury in water.
- Method 1311/7470 for the Toxicity Characteristic Leaching Procedure (TCLP) mercury.

All results will be reported on an "as received" basis. Details of the Quality Assurance Procedures employed at the contract laboratory are documented in the laboratory Quality Assurance Manual, and are available upon request.

5.0 NONCONFORMANCES AND CORRECTIVE ACTION

During the remediation, inconsistencies or problems that arise will be noted. A letter documenting the problem(s) and the method(s) and schedule proposed for implementing corrective actions will be submitted to the EVO Project Manager. If the problem is minor in scope such as with equipment and personnel decontamination, the decision concerning the procedure to follow will be made in the field by qualified personnel. When a more significant problem occurs or where changed or unanticipated conditions warrant a scope modification, the field personnel will notify the EVO Project Manager within 24 hours.

Revisions to the RWP may be required for operational considerations or scope of work changes. Revisions will be recorded in written form to and provided to affected parties.

6.0 HEALTH AND SAFETY

A Health and Safety Plan for remediation activities will be prepared in accordance with this section and the most recent Occupational Safety and Health Administration (OSHA), Environmental Protection Agency (EPA), and the National Institute for Occupational Safety and Health (NIOSH) regulations and guidelines. Specifically, the following reference sources will be used as a minimum in formulating the Health and Safety plan:

- OSHA 29 CFR 1910.
- OSHA/NIOSH/EPA United States Coast Guard "Occupational Health and Safety Guidelines for Activities at Hazardous Waste Sites".
- NIOSH Pocket Guide to Chemical Hazards.

The field project manager will prepare the Health and Safety plan. The Health and Safety plan and will address:

- Responsibilities of personnel.
- Personal protective equipment requirements.
- AOC controls and monitoring.
- Personnel and equipment decontamination procedures.
- Emergency procedures and spill response and control procedures.
- Job hazards and hazard control.

Each day the field personnel will conduct a safety awareness meeting. All field personnel involved with the AOC remediation activities will participate in the meeting and a Tailgate Safety Meeting Form or equivalent will be prepared. Additionally, the consultant / contractor's Corporate Safety Officer, Project Manager, and Field Team Leaders may conduct safety inspections during any task. Unsafe equipment or unsafe acts by project personnel will be noted and corrective actions will be implemented and documented.

Appendix A
Meter Location Assessment Form

Meter Location Assessment Form

Date: Location Name or Number

Parish or County: Township-Range-Section T - R - S

Latitude / Longitude

Residence or Building within 500 ft?	Y	N
Is this building a school, nursing home or day care center?	Y	N
Stream, Lake or water body within 100 ft.?	Y	N
Recreation Area (park, playground, etc.) within 500 ft.?	Y	N
Is the property on State or Federal Land?	Y	N
Does the Location flood periodically?	Y	N
Is the property located in or adjacent to a wetland?	Y	N

Type of Meter shelter configuration?

Shed Tower In-line Box None

(If meter shed is present answer the following)

Meter Shed construction type	Wood	Metal	Brick
Meter Shed Floor type	Wood	Concrete	Gravel/Dirt

Size of shed

Was there ever a meter shed or tower used at the location?	Y	N
If "yes" which type?	Shed	Tower

When was it removed?

Was the meter relocated when the shed or tower was removed? Y N

Meter Location Assessment Form (cont.)

Is mercury visibly present at this location?	Y	N
Does access to the location require a key	Y	N
Does access to the location require a special escort Or permission to enter (i.e. Industrial facility)?	Y	N
Does access to this site require a 4-wheel drive vehicle?	Y	N

The site is accessible for how many months per year?	1 -5	6-10	12
Circle the month(s) when access is best	J F M A M J J A S O N D		
How many meters are in used at this location?	1	2 3 4	5+
Type of meter(s) currently in use	Mercury		Dry-Flow

Is this the original setting for the meter?	Y	N
If "No" do you have knowledge of its former location?	Y	N
Is this a master meter setting?	Y	N
If "yes" were the wells originally metered elsewhere?	Y	N

Comments:

Assessment Information Provided by:

Appendix B
Characterization Data Sheet

Characterization Data Sheet
Location # _____

Assessment Summary

Assessment date:	AOC Name:
AOC assessed by:	Site Rank

AOC Characteristics

Lat/Long:	Land Use:	Type of meter(s):
Township-Range-Section	Population w/i 500 ft.?	Shelter Configuration:
Parish:	Bldg w/i 500 ft?	Active meter site:
Quad:	Water body w/i 100 ft?	Road accessible:

Analytical Results

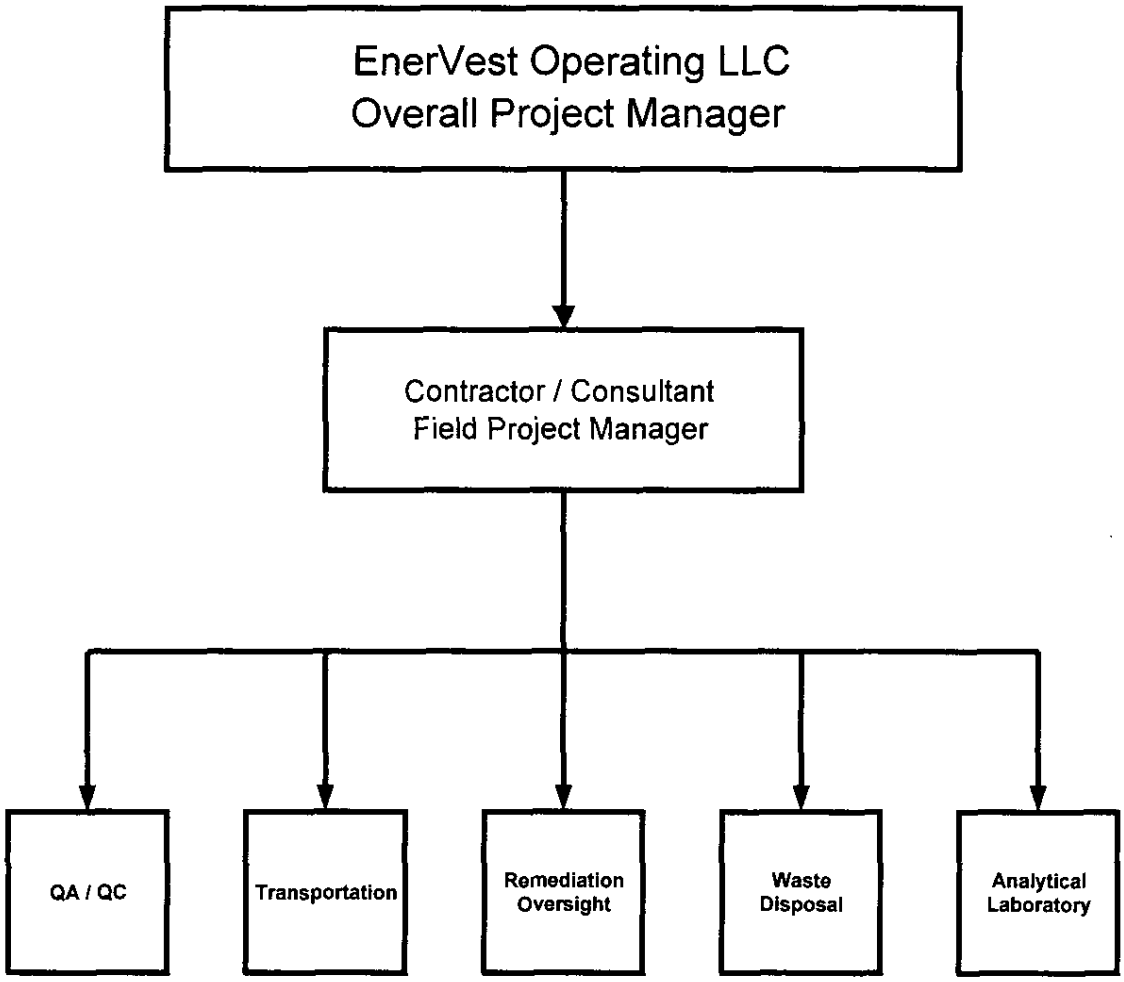
Total Hg (mg/kg) Grab:	Total Hg (mg/kg) Composite;

Discussion of Deviations from Standard Assessment Procedures:

Recommendations:

Appendix C
Organizational Chart

Former Mercury Meter Measuring Stations
Project Organizational Structure



Appendix D
Remediation Data Sheet

Remediation Data Sheet
AOC # _____

Remediation Summary

Volume removed:	# of mini bags used:	AOC revisit (#):
Maximum Depth:	Debris removed:	Secure Staging location:
Free mercury encountered:	Groundwater present:	Operational Constraints:

Start date:	Final Revisit date:
Arrival time:	# of revisit samples collected:
Departure time:	Revisit Base:
Weather:	Revisit Sidewall:
Crew Leader:	Crew Leader:

AOC Characteristics

Location Name or Number:	: Lat/Long	Land Use: Site Rank
Parish:	Shelter Config.	Building w/i 100ft?
Quad:	Shelter Size	Water Body w/i 100 ft.?:

Final Analytical Results

Total Hg base (mg/kg):	Total Hg Sidewall 1 (mg/kg):	Total Hg Sidewall 2 (mg/kg):
Total Hg Sidewall 3 (mg/kg):	Total Hg Sidewall 4 (mg/kg):	Waste ProfileTCLP Hg (mg/l):

Background (if analyzed) (mg/kg):

Discussion of Deviations from Standard Remediation Procedures:

Appendix E
AOC Sample Location Configurations 1 - 4

Appendix F
Hazardous Waste Generation Notification Form

HAZARDOUS WASTE GENERATION NOTIFICATION

General Information

Notification Date: _____
Generation / Accumulation Start Date:_____
Accumulation Expiration Date: _____
Hazardous Constituent: _____
Physical State: _____
Container Type: _____
Volume: _____
Weight: _____

Waste Classification

Conditionally Exempt Small Quantity Generator (CESG) *< or = to 220 lbs / month*	
Small Quantity Generator (SQG) *Between 220 - 2,200 lbs / month*	
Large Quantity Generator (LQG) *> 2,220 lbs / month*	

Location of Waste Container(s): _____
Hazardous Waste ID Number of Location:_____

Analytical Information

Laboratory:_____

Analyses Performed:	Date:	Results:

Additional Comments

Appendix G
Hazardous Waste Management Matrix

Regulatory Requirements	Conditionally Exempt Small Quantity Generator (CESQG)	Small Quantity Generator (SQG)	Large Quantity Generator (LQG)	Proposed Waste Management Action
Quantity Limits	≤ 220 lb./month ≤ 2.2 lb. acute ≤ 220 lb. acute residue §261.5(a) and (e)	Between 220-2,200 lb./month ≤ 2.2 lb. acute §262.34(d)	≥ 2,200 lb./month > 2.2 lb./month acute §261.5(e) & Part 262	All waste determined to be hazardous will be quantified for volume and weight. Hazardous waste will be managed as CESQG, SQG, or LQG depending on weight.
Make Hazardous Waste Determination	Required §262.11	Required §262.11	Required §262.11	All waste will be profiled for mercury using TCLP methods. Any waste exceeding 0.2 mg/l soluble mercury (TCLP) will be managed as hazardous following receipt of analysis.
EPA ID Number	Not Required §261.5	Required §262.12	Required §262.12	Existing EVO ID number will be utilized where available for a facility. If no EVO number is available, a temporary number will be obtained for a facility if volume exceeds CESQG limit.
On-Site Accumulation Quantity	≤ 2,200 lb. ≤ 2.2 lb. acute ≤ 220 lb. spill residue (if exceeded, becomes SQG) §261.5(f)(2) and (g)(2)	≤ 13,200 lb. (if exceeded, need RCRA storage permit) §261.34(d)(1)	No Limit	Accumulation of all waste determined to be hazardous will be consistent with CESQG, SQG, and LQG requirements.
Accumulation Time Limits	None §261.5	≤ 180 days or ≤ 270 days (if waste must be shipped over 200 miles) §261.34(d) and (e)	≤ 90 days §261.34(a)	All waste determined to be hazardous and below the SQG threshold will be shipped within 180 days of generation. All waste determined to be hazardous above the SQG threshold will be shipped within 90 days of generation per the LQG requirements. Generation dates will be tracked for all hazardous waste.
Storage Requirements	None §261.5	Basic 40 CFR 265 Subparts I and J technical standards for tanks and containers §262.34(d)(2) and (3)	Full compliance with 40 CFR 265 Subparts I,J,W,DD requirements for containers, tanks, drip pads and containment buildings respectively (except §265.197(c) and 265.200 for tanks) §262.34(a)	All waste determined to be hazardous waste will be properly containerized in 55 gallon DOT rated drums or, if large quantities of soil are generated, in duffle top nylon, water resistant cubic yard bags loaded into DOT approved roll off boxes or similar for shipment to the disposal facility. Containerized waste determined to be hazardous and exceeding CESQG amounts will meet the following: • Will be stored in a designated hazardous waste storage area of the facility. • Not be stored nearby other incompatible waste. • Will be labeled as hazardous • Will be closed during storage • Will be inspected weekly during storage with a log kept that includes date and time of inspection, inspector name, observations made, and corrective actions (if any). Inspections logs will be retained for three years.
Use Transporter with EPA ID Number	Not Required §261.5 (f) and (g)	Required §262.12 (c)	Required §262.12 (c)	Only licensed hazardous waste transporter s with the appropriate EPA ID numbers will be used to transport waste determined to be hazardous.
Off-site Management	State approved or RCRA permitted / interim status facility §261.5(f)(3) and (g) (3)	RCRA permitted / interim status facility §262.20(b)	RCRA permitted / interim status facility §262.20(b)	Only RCRA permitted TSD facilities that meet UTS and disposal requirements for mercury-impacted hazardous waste will be utilized for disposal of waste determined to be hazardous.
Manifest	Not Required §261.5	Required §262.20	Required §262.20	All waste determined to be hazardous exceeding the CESQG threshold will be manifested including all appropriate LDR documents. Trained EVO personnel or designated trained representatives will sign manifests.
Subject to Land Disposal Restrictions (LDR)	No §268.1(e)	Yes §268.1(b)	Yes §268.1(b)	LDR requirements will be met for any wastes determined to be hazardous exceeding the CESQG threshold.

Regulatory Requirements	Conditionally Exempt Small Quantity Generator (CESQG)	Small Quantity Generator (SQG)	Large Quantity Generator (LQG)	Proposed Waste Management Action
Annual Report (Louisiana requirement)	Not Required §261.5	Not Required §262.44	Required §262.41	If LQG status applies, a report will be prepared and submitted by EVO pursuant to the reporting requirements. Waste generated from this work plan may be included in the EVO facility report if already an LQG facility.
Waste Minimization Plan (Louisiana requirement)	No	No SQGs only need a Waste Certification on Manifest	Yes LAC 33:V.2245.K	EVO waste minimization plan will be used where EVO facility is a LQG. If EVO facility does not have a waste minimization plan, IETC will prepare a waste minimization plan for the facility during the month the identified hazardous waste is generated.
Personnel Training	Not Required §261.5	Basic training required §262.34(d)(5)(iii)	Required §262.34(a)(4)	EVO trained personnel will be used for managing identified hazardous waste pending disposal. If no EVO trained personnel are available, IETC personnel will be trained and will manage identified hazardous waste during the month the waste is generated.
Contingency Plan	Not Required §261.5	Basic plan §262.34(d)(5)(i)	Full Plan required §262.34(a)(4)	EVO contingency plans (where EVO facility is LQG) will be used for identified hazardous waste generated under this work plan. If EVO facility does not have a contingency plan, IETC will prepare a contingency plan for the facility during the month the identified hazardous waste is generated.
Emergency Procedures	Not Required §261.5	Required §262.34(d)(5)(iv)	Required §262.34(a)(4)	All EVO facilities have emergency procedures in place. EVO emergency procedures will be adopted and applied for identified hazardous waste generated under this work plan.
DOT Transport Requirements	Yes (as required by DOT)	Yes §262.30-262.33	Yes §262.30-262.33	Hazardous waste transporters currently used by EVO will be used for identified hazardous waste generated under this work plan wherever possible. Only waste transporters that comply with the HMRs will be used for shipping of identified hazardous waste generated under this work plan.